Reducing Poverty through Agricultural Development in China

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Abstract China has made dramatic progress in large-scale poverty reduction over the past 30 years and has greatly contributed to the fulfilment of the MDG poverty goal. Sustaining agricultural growth is the key driving force for China's poverty reduction because almost all the poor population are in rural areas and depend heavily on agriculture for their livelihood. Equitable land distribution is another important factor that makes China's agricultural growth more pro-poor. Land reform, marketisation and price increases in agricultural products, technological progress and accumulation of human and physical capital all played important roles in promoting agricultural and rural development. However, worsening income distribution, continuous economic structural transformation, resource and environmental constraints and lack of social security of migrant urban populations are major challenges for China's future poverty reduction. Economic, social and environmental policy adjustments are required to address these issues for sustainable and pro-poor growth in the future.

1 Introduction

China has made great progress in achieving the Millennium Development Goals (MDGs), especially in the area of poverty reduction. According to World Bank estimates, the number of people living below US$1 a day in 2005 PPP reduced from 499.1 million in 1990 to 97.4 million in 2008, and poverty incidence decreased from 44 per cent to 7.4 per cent in the same time period (World Bank 2012). The MDG poverty reduction goal of halving by 2015 the proportion of people whose income is below $1 a day has been fulfilled way ahead of time in China.

China's dramatic poverty reduction took place in the early 1980s when China launched its rural reform and opening-up policies and continues up to the present day. Table 1 shows continuous poverty reduction since the late 1970s no matter which poverty lines are adopted. Over 600 million people were lifted out of $1 a day poverty and 577 million people were lifted out of $2 a day poverty from 1981 to 2008. The official estimates using a much lower poverty line revealed a similar trend, with the extreme poor reduced from 250 million in 1978 to 13 million in 2008. The number of people living below the Chinese Low Income line decreased from 87 million in 2002 to 27 million in 2010. The large-scale poverty reduction continued in recent years as we witnessed over 60 million poor people living below the new official poverty line ($1.8 in PPP) emerging out of poverty in only two years, between 2010 and 2012.

China's large-scale poverty reduction contributed greatly to global poverty reduction and the fulfilment of the MDG poverty goal. Using the World Bank's preferred $1.25/day consumption poverty line, as seen in Figure 1 China reduced poverty from 835.1 million (84.0 per cent) to 173.0 million (13.1 per cent) between 1981 to 2008 (World Bank 2012). During this same period of time, poverty in the rest of the world actually increased by 13.2 million even as the poverty rate fell from 40.5 per cent to 25.2 per cent as the population increased. Without China, the world fell well short of the pace required to meet the MDG to halve the 1990 poverty rate by 2015. With China, the world is on track to meet this objective (Chen and Ravallion 2010).

2 Agricultural growth is the key driving force for poverty reduction

Poverty is measured mainly in terms of economic welfare (such as income and consumption). As the overall economic welfare of a country can increase only if its economy grows, economic growth has become a prerequisite for any country to reduce

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Table 1 **Changes in poverty since late 1970s**

	1978	1981	1984	1990	1996	2002	2008	2010	2012
World Bank $1 a day line		730.4	548.6	499.1	288.7	244.7	97.4		
World Bank $2 a day line		972.1	963.3	960.8	792.1	654.9	394.6		
Chinese old poverty line	250		128	85	58	28.2	13		
Chinese low income line						86.5	40.1	26.9	
Chinese new poverty line								160	99

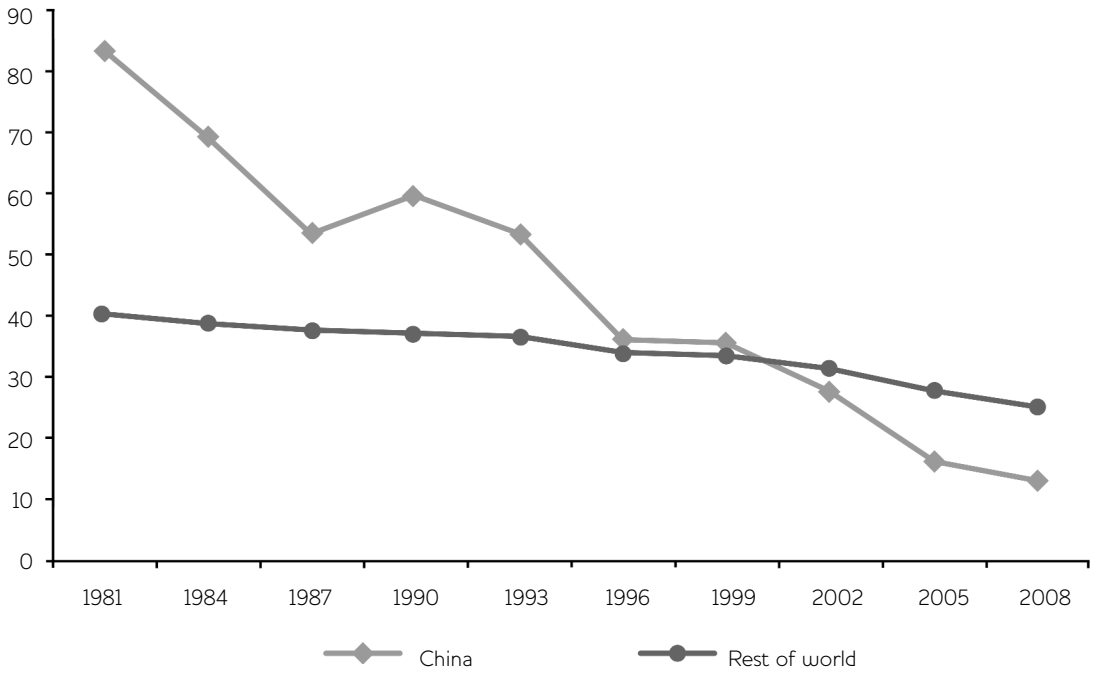
Source World Bank (2012); Household Survey Department of National Bureau of Statistics (2013).

absolute poverty on a massive scale. Cross-country studies find that sustained economic growth has a significant effect on poverty alleviation. Poverty change can be ascribed to the economic growth factor and income distribution factor. The economic growth factor accounts for 70 per cent of short-term poverty change and 95 per cent of long-term poverty change (Kraay 2004).

Broad-based rural income growth associated with market reforms and rapid economic development can explain most of the reductions in poverty in China. Poverty reduction actually slowed in the late 1980s after the poverty programmes were in place. In general, poverty reduction in China has been strongly associated with agricultural growth, both across time and across regions (Ravallion and Chen 2007; Montalvo and Ravallion 2010). The importance of agricultural growth contrasts with Brazil and India where growth in the service sector is much more strongly associated with poverty reduction (Ravallion 2010).

The effects of agricultural and rural growth on poverty reduction can be observed from the different stages of poverty reduction in China. Studies found that the proportion of rural residents living in poverty fell sharply in three periods:

Figure 1 **Poverty headcount rate (%) in China and the rest of the world, 1981–2008**



Source World Bank (2012). Note: based on consumption being below $1.25 a day based on 2005 PPP.

Table 2 **Distribution of the poor population in China, 2003**

		Income		Consumption	
	Share of population	% who are poor	Share of poor	% who are poor	Share of poor
Rural	72.5	9.5	99.2	17.9	99.4
Urban	27.5	0.2	0.8	0.3	0.6
Total	**100**	**6.9***	**100**	**13.1***	**100**

*As given in original source.
Source World Bank (2009). Note: poverty is measured using $1 a day poverty line.

1978–84, 1993–6 and 2004–07. In these periods, the primary industry (agriculture) and the per capita net income of rural households also grew at the fastest pace. By contrast, the proportion of rural residents living in poverty fell slightly in the periods (1984–93 and 1996–2004) while the primary industry and the per capita net income of peasants grew relatively slowly (Wang 2008).

Estimation using the official poverty figures reveals that the elasticity of poverty reduction to GDP growth was -0.52 during the time period of 1978–2007 and was statistically significant at less than 5 per cent. During this time period, the elasticity of poverty reduction to agricultural growth was -1.13 and statistically significant at the 6 per cent level during the same time period. This means that the poverty incidence falls by 1.13 per cent when the primary industry grows by 1 per cent. Other studies using higher poverty lines show an even greater effect of economic growth on poverty reduction. As estimated by Ravallion and Chen (2007), economic growth (represented by the per capita income growth rate of households) has a poverty incidence elasticity of -2.7 and a poverty gap elasticity of -2.9 to -3.0, which are all statistically significant. The poverty incidence elasticity of value added in the primary industry reached -8 between 1981 and 2001, which was four times the poverty reduction elasticity of the secondary and tertiary industries. Evidently, the agriculture-based primary industry growth has the largest effect on poverty reduction in China.

3 Why is agriculture more pro-poor in China?

A number of reasons can explain why China's agriculture is more pro-poor. First of all, almost all of China's poor population live in rural areas. Using nationally representative household survey data from the National Bureau of Statistics, the World Bank estimated the distribution of China's poor population between rural and urban areas in 2003 (Table 2). Whether measured in terms of income or consumption, the poor in China are predominantly in or from rural areas. Even if migrant workers are not included in the rural population, as is commonly done in the national household surveys, the rural poor account for about 90 per cent of all those living below the poverty line. In contrast, depending upon the precise urban–rural cost of living differentials used to measure real incomes and consumption, urban residents (excluding migrants) account for 1–3 per cent of the total number of poor in the country.

While income inequality within rural areas is somewhat higher than that within urban areas, the difference in rural and urban poverty rates largely stems from the widely noted rural–urban gap in mean incomes. China is a typical country with a dualistic economic structure. In China, the relatively developed cities coexist with the relatively backward countryside. Because of the divided rural–urban resident registration system and rural–urban migration restrictions, urbanisation lags far behind industrialisation, leaving too many people living in the rural areas. In addition, the urban population has long been given a broad range of social services or social security (including housing allowance, medical care, childhood education and pension) by the state and employers, whereas the rural population has had to rely on meagre and unstable social services up to the late 2000s or on social security provided by neighbourhood communities.

Agriculture is pro-poor because many of the poor live in remote areas with few local off-farm wage opportunities and find it difficult to migrate out due to limited labour, poor human capital, or the

Table 3 **Structure of rural household income from different sources (%), 2008**

Income quintiles	Agricultural income	Income from non-agricultural business	Wage income	Other income
Lowest quintile	47	4	35	14
Second quintile	39	6	37	18
Third quintile	35	7	40	18
Fourth quintile	31	9	42	18
Highest quintile	20	15	40	25

Source Department of Rural Economic and Social Survey of National Bureau of Statistics (2009).

need to care for children or the elderly (Du *et al.* 2005; World Bank 2009). Poor people depend much more on agriculture than non-poor people do in rural China as shown in Table 3. Almost half of the household income of the lowest income quintile comes from agriculture while this figure is only 20 per cent for the highest income quintile. As a household climbs up the income ladder, it depends less and less on agriculture for its livelihood.

A fundamental element of pro-poor agricultural growth is China's relatively equitable land distribution. All rural households in China have access to land unlike in India where there is a large landless class or Brazil where land is very unequally distributed. Even though land is not privately owned in rural China, households have long-term land use rights (up to 30 years). Land can be circulated among rural households for specialised large-scale agricultural production, but cannot be sold out. This type of land tenure arrangement eliminated the possibility of unequal land distribution and concentration, which is beneficial to poor rural households who depend heavily on agriculture for their livelihood.

4 What has contributed to sustaining agricultural growth during the past three decades?

China's dramatic poverty reduction is driven by economic growth, especially by agricultural growth. To understand China's poverty reduction, we need to understand how China achieved rapid agricultural growth since it launched the agricultural reform and opening-up policy. Land reform, marketisation and price increase in agricultural products, technological progress and accumulation of human and physical capital all played important roles in promoting agricultural and rural development.

The introduction of the Household Responsibility System in place of the commune production system in the early 1980s returned authority over farm decisions to households, significantly increasing incentives and productivity. Although rural land was collectively owned, the households were gradually given the rights of land usage and the rights of making production and product decisions. This reform removed adverse incentives from the collective production process and enabled farming households to make independent production and employment decisions based on their resources and comparative advantages. Empirical studies show that the Household Responsibility System reform alone accounted for 47 per cent of agricultural growth in the early 1980s (Lin 1992).

China reformed its agricultural product purchase and sales system and eventually turned it from the state monopoly to a market-oriented system. Reform of the purchase and sales system was a long process. At the outset of reform, the vast majority of agricultural products were purchased by the state at diverse prices rather than a single price. The greater the quantity of products sold, the higher the average price a farmer receives. This produced an effective positive price incentive for farming households to increase their production. The terms of trade of agricultural products improved by 40 per cent in the early 1980s (World Bank 2003). By the late 1980s, agricultural products other than grain, cotton and edible oil were purchased and sold subject to market forces. The Chinese government also raised agricultural product purchase prices by a wide margin in the midst of the reform. In 1979, the state raised the prices of more than ten agricultural products, including grain, cotton and edible oil. As a result, the

Table 4 **The contribution of technological progress to agricultural output (%)**

Period	Gross agricultural output growth rate	Contribution of technological progress
1985–1990	4.53	33.99
1991–1995	7.48	27.10
1996–2000	6.08	36.82
2001–2005	5.24	50.49
2006–2010	4.80	50.89

Source Zhao and Yuan (2009); Zhao (2012); National Bureau of Statistics (2011).

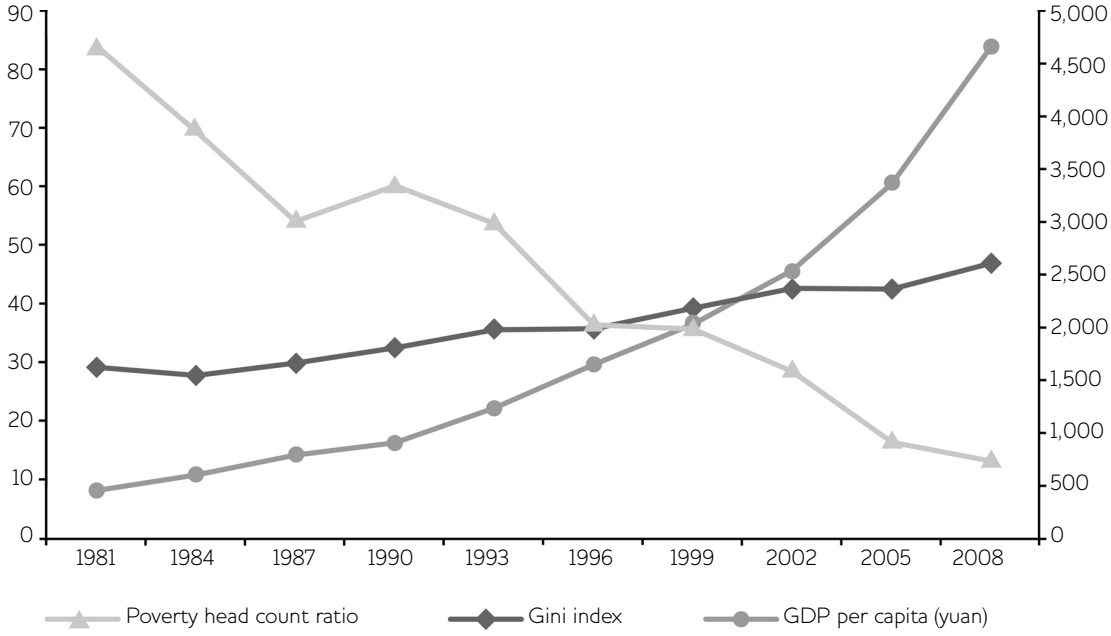
national agricultural product purchase price index surged 22.1 per cent from a year earlier (Zhang *et al.* 2007). In the mid-1990s, the Chinese government drastically raised agricultural product purchase prices once again and has implemented a policy to purchase grain at floor prices since then. Raising agricultural product prices produced two results. First, it directly promoted agricultural growth. Ravallion and Chen (2007) found that agricultural product purchase prices not only had a significant impact on the current-year output but also had a greater impact on the next-year output. Raising the purchase price by 1 per cent increased the value added in primary industry by 0.21 per cent in the current year and 0.32 per cent in the next year, as measured in current-year price terms. Second, it directly increased rural household income. From 1978 to 1985, the rural household income increased RMB125.74 billion as a result of raising agricultural product prices, accounting for 15.5 per cent of total household income growth during the period (Xie 1988).

Rapid agricultural growth induced by institutional reform is often short-lived and agricultural growth has to rely on production factor investment increase and technological efficiency gains from technological progress after the institutional factor effects have been fully released. Since 1985, China's agricultural growth has increasingly relied on the total factor productivity gains from technological innovation and diffusion. Table 4 provides the gross agricultural output growth rates and the technological progress contribution rates in different periods since 1985. As shown in the table, the contribution of technological progress to agricultural growth rose from around 30 per cent to 51 per cent from the late 1980s to the late 2000s. At present, one-half of China's agricultural growth is driven by technological progress.

Accumulation of human and physical capital at the early stage paved the way for agricultural development in the reform period. Although the commune system stifled the growth of agricultural production efficiency and productivity, the proactive social policy greatly promoted human capital accumulation during the first 30 years after the formation of the PRC. The net enrolment ratio of school-age children was only 20 per cent in 1949 when communist China was established and reached 95.9 per cent in 1978. The junior high school enrolment ratio of rural elementary school graduates was only 32.3 per cent in 1962 and reached 86.4 per cent in 1978. The vast majority of children were able to graduate from junior high schools in the 1970s (Planning Department of the Ministry of Agriculture 1989). The rural public medical services also achieved remarkable progress in the 1960s and 1970s; the infant and maternal mortality rate fell sharply; cooperative medical care covered almost every rural resident. Notwithstanding the lack of any significant improvement in the material standard of living, the average life expectancy increased from 35 years to 68 years between 1949 and 1978 thanks to health care improvements. Education and medical service improvement provided an enormous amount of human capital for agricultural and rural economic development after the reform.

China also achieved remarkable accomplishments in rural physical capital accumulation during the commune era. A great deal of farmland transformation and water conservancy and irrigation infrastructure was built by collective labour during this period. The national irrigation coverage was only 20 million hectares in 1952 and

Figure 2 **GDP growth, poverty reduction and inequality change in China, 1981–2008**



Source World Bank (2012); World Bank (2013); National Bureau of Statistics (2011). Note: poverty head count ratio is based on consumption being below $1.25 a day based on 2005 PPP. GDP is at 1978 constant price.

reached 45 million hectares in 1978. During this period, the electro-mechanically irrigated area increased from 0.3 million hectares to 25 million hectares (Planning Department of the Ministry of Agriculture 1989). However, the physical and human capital was not put to effective use due to the lack of adequate incentives under institutional constraints during the commune period.

5 Challenges in future poverty reduction

Even though China has achieved remarkable accomplishments in poverty reduction due to sustaining rapid economic growth, especially agricultural growth, China still faces numerous challenges in its future poverty reduction.

Worsening income distribution in China has adverse effects on poverty reduction since the poor benefit less and less from economic growth. As revealed in Figure 2, increasing income inequality accompanied fast economic growth and dramatic poverty reduction in the reform era. According to the World Bank, the overall Gini coefficient of per capita income increased from 29.11 to 46.9 from 1981 to 2008,[1] which turned China from a very equal country to one of the most unequal societies in the world. As a result, the elasticity of poverty reduction to economic growth is decreasing. Even if China can maintain fast economic growth in the future, it is unlikely to achieve a similar rate of poverty reduction without the improvement of income distribution.

Continuous economic structural transformation has turned China from an agricultural-based economy to an industrialised economy. Urbanisation has brought hundreds of millions of rural residents into cities and towns, with the urban population surpassing the rural in 2011. This transformation has effects on both the urban–rural distribution of poverty and income sources of rural households. Over time the share of agricultural income in total rural household income has fallen steadily while the share of wage income has increased to over 40 per cent by 2011 thanks to robust growth in the demand for (and wages of) migrant workers. In many poor villages, young adults have nearly all out-migrated. For this reason, non-agricultural growth is likely to play an increasingly prominent role in poverty reduction in the future.

The limits to agricultural resources such as arable land and water, and the environmental degradation caused by the intensive use of

chemicals such as fertiliser and pesticide put strict constraints on future agricultural growth. The fresh water resources in China are only 6 per cent of the world total and per capita water possession is only one quarter of the world average (Zhang *et al.* 2013). China is the world's second largest energy consumer after the USA and likely to be the largest consumer in the near future. Carbon emissions increased from 528 million tonnes to 2.12 billion tonnes between 1985 and 2010 (Xie *et al.* 2013). Because of its huge population size and its economic scale, China's overall economic growth will have big impacts on resource demands and the environment. The sustainability of this growth is a major challenge.

Even though a large proportion of the rural population has migrated into cities to become migrant workers, they are denied urban social security and public services and their poverty will become increasingly pronounced. In addition, China has not paid enough attention to the poverty problems of rural vulnerable groups such as children, women and the disabled who are prone to fall into poverty.

6 Possible framework or policies for future poverty reduction

Future large-scale poverty reduction requires a framework or policies that will address a number of important issues:

- Addressing inequality in income, assets and opportunities. The accumulation of assets and the human capital of the poor is the most effective pathway out of poverty, enabling them to catch up in the long term.
- Policies to encourage pre-school early child development, to extend free compulsory basic education from 9 years to 12 years and to improve rural health services to ensure the poor benefit from the system should be at the core of social policy reforms.
- Promoting pro-poor growth strategy. It is crucial that growth should be centred on sectors the poor can easily participate in. Development of agriculture and labour-intensive manufacturing and services with a comparative advantage should be encouraged through the adoption of favourable fiscal and financial policies. Tax exemptions and microfinance services to rural households and SMEs are effective measures to stimulate these productive services. Progress in agricultural technology will play an increasingly important role in agricultural development in the future, and will need more government support.
- Adopting an environmentally friendly economic development strategy. The development of green energy and adoption of cleaner production must be encouraged. The industrial infrastructure must also be upgraded to become more resource-saving and energy efficient.
- Affordable social welfare programmes targeting the poor and disadvantaged groups are essential supplements to pro-poor growth. To achieve the above objectives, a clear division of responsibility as well as fiscal reform and revenue transfer is needed between central and local governments to guarantee equal access to public services and welfare benefits between rural and urban areas and among different regions.

7 Conclusions

It is clear that the MDGs needed China more than China needed the MDGs. Economic growth, primarily agricultural growth, drove down poverty rates at historic speeds, allowing the world to meet its global MDG 1 targets. This decline in rural poverty was partly due to the location of the poor in rural areas but also due to institutional reforms, relatively equal land access, and large and sustained investments in agriculture, education and health. Future challenges that need to be monitored by a future post-2015 framework include income and social inequalities, social security for migrant urban populations and the intensity of resource use of future sources of growth.

Note

1 There is no official overall Gini index in China because the sampling frameworks of rural and urban household surveys are not unified. World Bank estimation of Gini index for 1981–2005 is used and the Gini index for 2008 is estimated by researchers from the China Household Income Project.

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